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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,159	01/23/2002	Larry W. Bowman	60,130-1275 (01MRA0541)	9557
26096	7590	02/19/2004	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			LEWIS, TISHA D	
			ART UNIT	PAPER NUMBER
			3681	

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Applicant(s) 10/055,159	Applicant(s) BOWMAN, LARRY W.	
	Examiner TISHA D. LEWIS	Art Unit 3681	<i>MW</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,7,9,10 and 12-20 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5,7,9,10,12 and 20 is/are allowed.
- 6) ☒ Claim(s) 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

The following is a response to the amendment received on December 29, 2003, which has been entered.

#### ***Response to Arguments***

Claims 1-5, 7, 9, 10 and 12-20 are pending in the application.

-Applicant's arguments, see pages 6 and 7, filed December 29, 2003, with respect to the rejection(s) of claim(s) 13 and 14 under 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of applicant's argument that the novelty of claim 13 is an electric motor within a non-rotating spindle to drive an output shaft within a wheel hub.

-The 103(a) rejections of claims 15-19 has been withdrawn due to the withdrawal of the 102(b) rejection above.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Iijima et al ('564) (previous reference cited in office action mailed on September 24, 2003). Iijima et al discloses a drive unit assembly for a vehicle having (Figure 16):

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a non-rotating axle case (402) (corresponding to a non-rotating spindle as claimed) mounted to a vehicle structural component (401) and defining an interior chamber,

a wheel hub (424) supported on at least one bearing (425, 426) for rotation relative to the axle case about an axis of rotation and defining an interior chamber,

a reduction gear assembly (420) mounted within the hub chamber having an input (421) and an output (423) operatively coupled to the wheel hub (424), and

an electric motor (403) mounted within the interior of the axle case having an output shaft (413) operatively coupled to the input to drive the wheel hub about an axis of rotation.

Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Chung ('018). Chung discloses a drive unit assembly for a vehicle having:

a non-rotating axle (12) (corresponding to a non-rotating spindle as claimed) mounted to a vehicle structural component (frame, not shown) and defining an interior chamber,

a wheel hub (32) supported on at least one bearing (40, 106, etc.) for rotation relative to the axle about an axis of rotation and defining an interior chamber,

a reduction gear assembly (22) mounted within the hub chamber having an input (30) and an output (108, 92) operatively coupled to the wheel hub, and

an electric motor (24) mounted within the interior of the axle having an output shaft (26) operatively coupled to the input (via shaft 28) to drive the wheel hub about an axis of rotation.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knobloch et al ('000) in view of Fukui ('293). Knobloch et al discloses a drive unit assembly for a vehicle having;

a non-rotating spindle (48) mounted to a vehicle structural component (38) and defining an interior chamber,

a wheel hub (24) supported on at least one bearing (96) for rotation relative to the spindle about an axis of rotation and defining an interior chamber,

a reduction gear assembly mounted within the hub chamber having an input (150) and an output (30) operatively coupled to the wheel hub (24), and

a motor (42) mounted partially within the interior of the spindle having an output shaft (46) operatively coupled to the input to drive the wheel hub about an axis of rotation.

The motor of Knobloch et al is commonly a hydraulic motor, but can also be an electric motor (column 1, lines 14-16). Knobloch does not disclose the motor within the interior chamber of the spindle as claimed.

Fukui ('293) discloses a driving mechanism for a vehicle having;

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a non-rotating motor housing (16) (corresponding to a non-rotating spindle as claimed) mounted to a vehicle structural component and defining an interior chamber,

a wheel hub (25) supported on at least one bearing (26) for rotation relative to the motor housing about an axis of rotation and defining an interior chamber,

a reduction gear assembly (33) mounted to the hub having an input (4) and an output (22) operatively coupled to the wheel hub (via casing 11), and

a hydraulic motor (2) mounted within the interior of the motor housing having an output shaft (1) operatively coupled to the input to drive the wheel hub about an axis of rotation. Fukui does disclose that the hydraulic motor can be replaced by an electric motor (column 5, lines 44-46).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Knobloch et al to mount the electric motor within the interior chamber of the spindle in view of Fukui to provide a compact construction such that the assembly is shorter in width than the tread of a tire (column 1, lines 57-60 of Fukui).

As to claim 14, Knobloch et al discloses the drive unit assembly having an inner ring gear (26) of the reduction gear assembly mounted to the spindle and operatively coupled to the input and an outer ring gear (30) mounted to the wheel hub and operatively coupled to the output.

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knobloch et al in view of Fukui as applied to claims 13 and 14 above, and further in view of Rosen ('376). As to claim 15, Knobloch et al in view of Fukui discloses the

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reduction gear unit having a plurality of inner gears (120) meshing with the inner ring gear (26) and a plurality of outer gears (122) meshing with the outer ring gear (30) forming a plurality of gear pairs mounted to a common shaft, but does not disclose the inner and outer gears paired together on a common shaft rigidly.

Rosen discloses a manner of constructing a reduction gear assembly including plural gear pairs (inner and outer gears 22 and 24) rigidly mounted to a common shaft (20).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the reduction gear unit of Knobloch et al in view of Fukui to mount the gear pairs on a common shaft rigidly in view of Rosen to compensate for eccentric tolerances in the unit resulting in load equilibrium by having the inner and outer gears mounted rigidly to a common shaft.

As to claim 16, Knobloch et al discloses (table in column 5) the inner gears having a first predetermined number of teeth different from the outer gears second predetermined number of teeth.

As to claim 17, Knobloch et al discloses the input of the reduction gear unit being a sun gear (150) meshing with the inner gears and mounted for rotation with the motor output shaft (46).

As to claims 18, Knobloch et al discloses the reduction gear unit having a spider (114) that supports the shafts (116) from each of the gear pairs such that each gear pair rotates with the spider about the axis of rotation.

As to claim 19, Knobloch et al discloses the reduction gear unit having the spider rotatably supported on a bearing surface (144) such that the sun gear and the spider can rotate at different speeds relative to each other.

***Allowable Subject Matter***

Claims 1-5, 7, 9, 10 and 12 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of record does not disclose or render obvious a motivation to provide for:

-(As to claim 1) an electronic drive unit assembly having a plurality of planet gear sets mounted to a spider ***directly*** supported by an output shaft of an electric motor in combination with the electric motor being mounted within a chamber of a non-rotating spindle of a wheel hub which has a chamber for supporting an inner ring gear and the chamber of the spindle supporting an outer ring gear.

Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or render obvious a motivation to provide for:

-an electronic drive unit assembly having inner and outer gears mounted to a common shaft which is supported by a spider in ***direct*** driving engagement with an output shaft of an electric motor.



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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### FACSIMILE TRANSMISSION

Submission of your response by facsimile transmission is encouraged. Group 3600's facsimile number is **(703) 872-9326 before final and 703-872-9327 after final**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see MPEP 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check **should not be** submitting by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MPEP 512). The following is an example of the format the certification might take:

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Typed or printed name of person signing this certificate:

\_\_\_\_\_

\_\_\_\_\_  
(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MPEP 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Harder et al ('689) is cited as having a means for removing an electric motor from a spindle wherein the electric motor (B) is mounted within the spindle (C) and supports a rotatable wheel hub (D) and mentions that a gear unit is used to connect the hub with the motor at an inboard of the spindle.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TISHA D. LEWIS whose telephone number is 703-305-0921. The examiner can normally be reached on M-Thur 8 AM TO 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES A. MARMOR can be reached on 703-308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Tdl  
February 14, 2004

*Dee D*  
Tisha D Lewis  
Primary Examiner  
*AU 3681 2/14/04*